Material Efficiency & Resource Conservation

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Resource Policy in the Area of Enterprise-Related Instruments

Executive Summary

Summary report of Task 4 within the framework of the
„Material Efficiency and Resource Conservation“ (MaRess) Project

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1 Introduction

1.1 Present situation

Improving resource efficiency is becoming a high-priority political issue both in Germany and internationally. The cost of materials in the manufacturing industry in Germany rose from EUR 577 billion to EUR 754 billion between 2002 and 2006 (German Federal Statistical Office 2008). In the goods production sector, material costs accounted for nearly 45% of total costs in 2006, while personnel costs incurred by companies accounted for just 19% (Federal Statistical Office 2008). The German Agency for Material Efficiency (demea) estimates that the German economy could realise total savings of up to EUR 100 billion in this area (demea 2009).

In a 2005 study into how SMEs in selected sectors could reduce expenditure on materials, Arthur D. Little GmbH, the Wuppertal Institute and the Fraunhofer Institute for Systems and Innovation Research (ISI) found that within seven years these enterprises could cost-effectively tap a material savings potential of between EUR 5 billion and EUR 11 billion per annum. Reducing resource consumption is an especially important consideration for SMEs. Optimised process flows and efficient use of resources lead to cost reductions, thereby improving competitiveness. Moreover, the quest for resource-saving possibilities encourages more innovative business management. Current studies also show that innovations in the area of resource efficiency contribute to job security and help to create new jobs.

Making the improvement of resource efficiency a factor in the micro-economic decision-making process also leads to a win-win situation for business enterprises as far as the aforementioned cost savings potential is concerned. In addition, cutting resource consumption reduces the business risk of price rises in raw materials on the one hand and rising price volatility on the other. It may also help to alleviate any shortages in the supply of scarce raw materials. By systematically improving resource efficiency, companies can often enhance their competitiveness, especially as economising on resources often triggers or encourages in-house innovation processes.

Task 4, “Resources Policy at the Enterprise Level”, addresses these aspects, along with obstacles, in selected areas of corporate activity, focusing on enterprise-oriented policy instruments and measures affecting both the enterprise and the value chain. The goal is to optimise the impact and diffusion of policy instruments so that business enterprises are better placed to improve resource efficiency. This refers back to the core strategies for a successful resource efficiency policy described in Step 7.2.

The measures proposed in Task 4 begin by stimulating individual enterprises with the aim of supporting their implementation of measures to improve resource efficiency in the desired way. Decision-making and creative scope will remain the purview of actors in the individual enterprises.(see Görlach et al. 2009).

1.2 Task 4 Steps

With the results of Task 4 of the MaRess project we have succeeded in assembling and singling out instruments and measures conducive to a successful resource-efficiency policy for business enterprises and their market activity in global value networks and chains. The Task 4 policy mix, focusing on enterprise-related aspects, is embedded in the wider context of MaRess project instruments. Thus the proposals for measures and instruments developed in Task 4 are supplemented by macro-economic policy measures (Task 3) and proposals for consumer policy (Task 12).

The core strategies described in Step 7.2 form the basis for the portfolios of instruments in Task 3, Task 4 and Task 12. The relevant core strategies are:

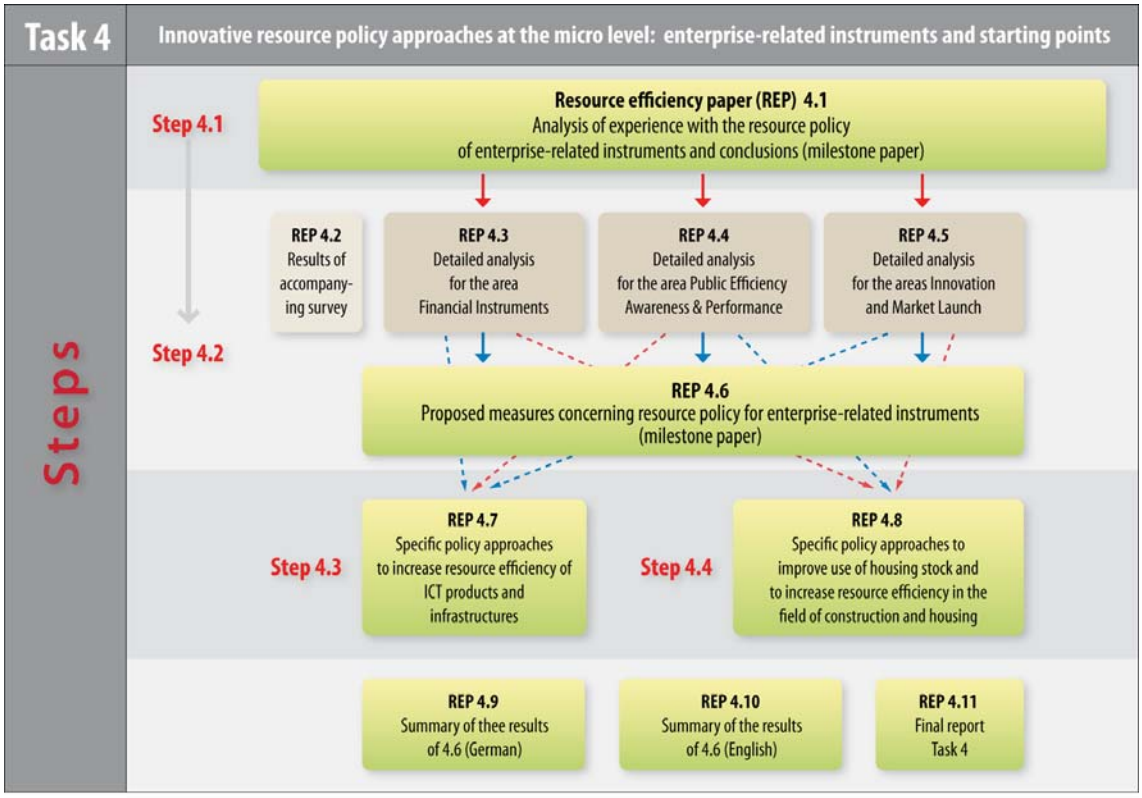
- "Giving Innovation a Direction – Sustainable Future Markets for Resource Efficiency Solutions" in the areas of promotional programmes, corporate reporting, financial instruments, research and development, innovation and market launch of product service systems
- "Mobilising Institutions – the Key to Successful Diffusion" in the areas of advisory services, funding institutions, forging networks
- "Resource-Efficient Products and Services" in the areas of invention and of market launch and diffusion processes
- "Changing Attitudes" in the areas of enterprise-level communication and education strategies and training and continuing education.

Eleven papers were produced for Task 4, all of which can be downloaded at http://ressourcen.wupperinst.org/downloads/index.html (see Fig. 1). Step 1, "Analysis of Resource Policy Options in the Area of Enterprise-Related Instruments" (Görlach et al. 2009), involved selecting the instrument areas to be analysed, focusing especially on the criterion "high potential impact on resource efficiency". Resource Efficiency Paper (REP) 4.1 outlines the results together with the methodological background and the procedure.

Resource Efficiency Paper (REP) 4.6 (Liedtke et al. 2010) is a milestone paper summarising the central findings of different studies in the three areas of activity for which detailed analyses were produced at Step 2 (Onischka et al. 2010, Görlach/Schmidt 2010, Lemken et al. 2010 – REP4.3, REP4.4, REP4.5), along with the findings of the interview paper (Görlach/Zvezdov 2010 – REP4.2). REP4.6 contains an overview of the integrated policy mix of enterprise-oriented instruments. REP4.9 gives a summary of the policy mix developed (Liedtke et al. 2010). The policy mix or selected elements thereof were made more concrete in the context of two case studies, "Construction and Housing" (REP4.7) (Knappe/Lasche/Büttgen 2010) and "Value Chains of Information and Communication Technology Products" (REP4.8) (Bienge et al. 2010).

In devising the Task 4 policy mix, we took expert legal advice in order to take account of legal pitfalls and the latest jurisdiction in a two-stage process.

Fig. 1: Task 4 Results Papers – Overview and Interaction



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1.3 Areas of Activity Analysed in Detail

For each of the three areas of activity on which we focused, we explain below the interdependencies on which the individual measures derived are based. Initially, the main focus was on describing the status quo – the starting point for identifying specific obstacles that were then addressed by the policy mix developed.

1.3.1 Financial Sector

The financial sector can assume an important role as an initiator and multiplier in improving resource efficiency in companies and can play a formative role. Moreover, in its role as an intermediary the financial sector also influences the development of a collective policy framework. However, the protection of resources has not been a consideration in the financial sector so far, though structurally this would be justified. This can be attributed to the following main obstacles:

- The lack of awareness of resource efficiency issues among finance market-related institutions and intermediaries
- The incomplete and inconsistent data basis on resource efficiency;

- Shortcomings in the supervision-relevant risk management of banks.

1.3.2 Public Efficiency Awareness & Performance

For a resource-efficient style of operation to be implemented in business enterprises, agents must be sensitised to the issue. Intermediaries play an important role in raising "efficiency awareness" (Görlach et al. 2009) in enterprises and often have greater success in influencing enterprises than state actors. This is because of their relative proximity to enterprises and hence closer communicative relations. If state actors communicate "indirectly," i.e., by strategically integrating the (leading) actors at the intermediary level into the communication process, it is not only possible to address individual behaviour better but also to shape these regulatory systems themselves. Insufficient awareness can be attributed inter alia to the following main obstacles:

- Complexity: the lack of a systemic understanding of resource efficiency among enterprise-related actors from both a technical and a social point of view
- Communication: language and communication problems owing to different professional and group-related backgrounds;
- Support structures: there is no guarantee that promotional, advice and training offers will fit their purpose exactly

1.3.3 Innovation and Market Launch

The decision on how many resources will be used throughout the life cycle of a product or service is definitively taken in the early stages of the innovation process when it is being developed (see Pfriem 2006). Moreover, these early stages provide the best opportunity to influence product features, production processes and resulting cost structures. Yet the topic of resource efficiency currently plays little part in the early stages of innovation processes. This can be attributed inter alia to the following obstacles:

- The innovation culture: here, especially, management and employees are inadequately qualified, which leads to a lack of market information and defined responsibilities
- Deficiencies in external framework conditions: this applies to structures and dynamics on the capital markets, to innovation advice services and to funding structures
- The effectiveness of promotional programmes in resource efficiency and capacity for innovation is often inadequately implemented in promotional systems

2 Enterprise-Related Instruments – the Policy Mix

2.1 Task 4 Innovation: A Policy Mix to Stimulate Enterprises

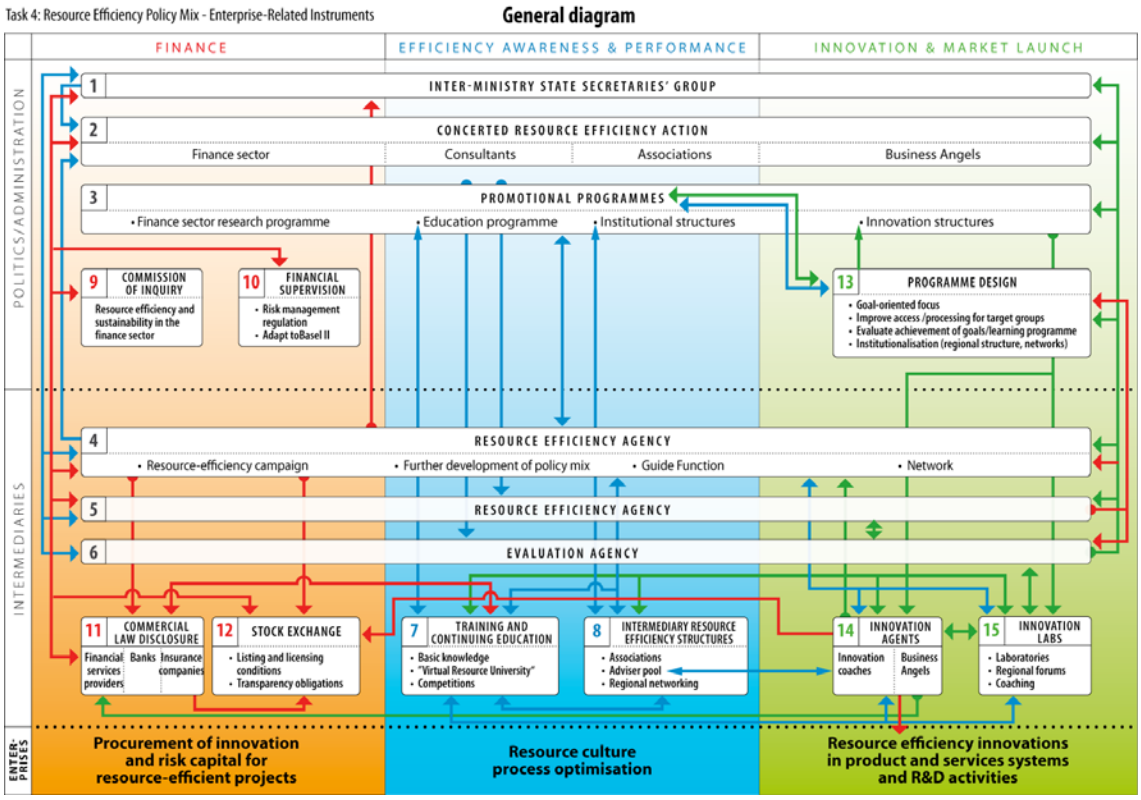
The basic idea behind most of the individual measures proposed in Task 4 is to encourage efficient behaviour in a way that is compatible with incentive while leaving the details of individual measures open and not making them mandatory. In this way existing market mechanisms would hardly be affected.

Since entrepreneurial (decision-making) freedom is to be restricted as little as possible, the issue of resource efficiency must be disseminated by raising awareness and be integrated into actors’ competency and qualification profiles. In addition, ecological and/or resource-saving technologies must be promoted in enterprise-oriented innovation and research processes.

Since the necessary advances in resource efficiency can only be realised by means of radical system innovations, further measures using existing policy instruments will be required. These would aim to accelerate the spread of resource-efficient products, technologies and processes and innovation activity. In other words, application of the policy mix would begin at several points simultaneously.

Individual instruments may be chosen from the portfolio of enterprise-related instruments in Task 4 (comprising fifteen individual measures) to enable an easier start to the ambitious programme of action. Together with the measures resulting from the other tasks, especially Tasks 3 and 12, Task 4 measures must be merged with the policy mix from Task 7 (see Hennicke/Kristof/Dorner 2009, Kristof/Hennicke 2008). In the long term, however, it would be preferable and expedient to implement the individual Task 4 measures as a package because they build on one other and have been coordinated and hence promise more lasting success – i.e. advances in resource efficiency across different sectors. Fig. 2 shows cross-links and complex interdependencies. For further explanations see in-depth analysis papers REP4.3, REP4.4, REP4.5 and REP 4.6.

Fig. 2: Schematic Overview of Interdependencies between Individual Instruments in the Task 4 Policy Mix



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2.2 Overview of Individual Measures in the Task 4 Policy Mix

Starting from the policy instruments proposed in the three areas of activity (see detailed analysis papers REP4.3, REP4.4 and REP4.5), a consistent policy mix was developed. All instruments serve to support enterprises in developing resource-efficient technologies, products and services and in aligning their corporate culture and their management accordingly. The individual instruments are co-ordinated, which leads to system-oriented reinforcement of the impact of individual measures. Tab. 1 gives an overview of the policy instruments developed and categorises them in the resource-policy context. The policy mix comprises a total of fifteen policy instruments, of which six, instruments (1) to (6), are designed for application across different areas of activity. This means they impact on all three areas of activity. However, each area of activity also has specific instruments tailored to its particular area: (9) to (12) are for finance, (7) and (8) for public efficiency awareness & performance, and (13) to (15) for innovation and market launch. The instruments shown in Tab. 1 are described in detail.

Tab. 1: Overview of Task 4 Policy Instruments by Resource Policy Category

	Administrative law instruments	Financial policy instruments	Agreed objectives	Information-related instruments	Institutional instruments	Qualification instruments	Research and development policy
Cross-area policy instruments							
(1) Set up inter-ministry state secretaries' group					X		
(2) Concerted resource-efficiency campaign			X		X		
(3) Set up promotional programmes		X					X
(4) Establish resource-efficiency agency		X	X	X	X	X	X
(5) Create resource-efficiency data basis				X			
(6) Establish evaluation agency			X	X	X		X
Policy instruments in the public efficiency awareness & performance area of activity							
(7) Step up training and continuing education				X		X	
(8) Create intermediary resource-efficiency structures					X	X	
Policy instruments in the financial instruments area of activity							
(9) Commission of inquiry into resource efficiency and sustainability in the financial sector				X	X		
(10) Financial supervision, statutory and supervisory regulations	X	X					
(11) Commercial law disclosure	X						
(12) Stock exchanges: integrate ecological aspects			X				
Policy instruments in the market launch and innovation area of activity							
(13) Programme design (promotional programmes)							X
(14) In-company innovation agents					X	X	
(15) Create innovation laboratories					X		

Source: Compiled by the authors

However, the impact and diffusion of the existing measures will be facilitated if the core measures below (Tab. 2) are implemented first. These core measures were selected on the basis of a detailed analysis of the interactions and synergies between individual measures in the Task 4 mix.

Tab. 2: Essential Core Measures in the Task 4 Policy Mix

Essential core measures for increasing resource efficiency
(3) Establish promotional programmes
(4) Resource Efficiency Agency: promote communication and information
(5) Resource efficiency data basis: develop enterprise-related key performance indicators relating to resources
(6) Evaluation agency: analyse effect of funding programmes and the entire research funding system
(7) Training and continuing education: qualification and education concepts
(11) Commercial law disclosure: publish key performance indicators for resources in company reports

Source: Compiled by the authors

2.3 Characterisation of Policy Measures in the Task 4 Policy Mix

There follows a brief description of the individual policy instruments, focusing on the central objectives and mode of action. A detailed description of their conception and interactions with other policy instruments, along with more detailed statements of costs, can be found in the detailed analysis papers (Onischka et al. 2010, Görlach/Schmidt 2010, Lemken et al. 2010).

2.3.1 Inter-Ministry State Secretaries' Group: Develop and Manage Cross-Departmental Innovation Policy Measures (1)

Idea: To create a group of state secretaries facilitated by the Federal Chancellor's Office to discuss strategies and policy measures for increasing resource efficiency and coordinate them across departments.

Organisation: Since policy measures in the area of resource efficiency and sustainable finance affect a variety of policy areas, they can only be realised effectively if cross-departmental strategies are adopted. An inter-ministry state secretaries' group is to be created in the near future and become established in the long term, and its membership must reflect the areas of activity focussed on in the overall context of the MaRess project and its policy Tasks. It will draw on the experience of similar bodies in the past (e.g. the "Green Cabinet").

Among other things, it should mobilise and co-ordinate the top ten priorities for action in the field of sustainable finance:

- The future of financial market regulation (Basel III)
- Guidance for the research programme "Sustainable Finance"
- The main emphases of financial products to promote exports
- The main tasks of state-run business development banks
- Corporate reporting
- Transparency responsibilities on the capital market
- Fiscal support for sustainable financial investments
- (Financial market-compatible) data collection and provision
- The role of the financial supervisory authorities
- An alliance for long-term efficiency and sustainability in the financial sector.

2.3.2 Concerted Resource-Efficiency Campaign: Create Awareness (2)

Idea: Along with political commitment to resource efficiency issues, there is a need for private-sector willingness and/or involvement and co-ordinated campaigns by politicians and the private sector. "Concerted" involvement of leading private-sector and political representatives will give the issue of resource efficiency symbolic significance. Leading representatives of consulting firms, industry associations or financial institutions will act as mouthpieces to spread the message among their own target group.

Organisation: Ten to twenty leading political and private-sector actors will act jointly to agree specific packages of measures for their target groups and actively support a national strategy for the private sector. They will support and facilitate implementation in their own target groups. Bodies that could be involved are the Federal Chancellor's Office, the Federal Environment Ministry and the Federal Environment Agency, the Federal Ministry of Economics and Technology, the Federal Ministry of Finance and the Federal Ministry of Education and Research. In addition, industry associations, banks and consulting companies should be brought in.

The inter-ministry state secretaries' group (1) will entrust the Resource Efficiency Agency (2) with the organisational implementation. In this connection, we recommend developing and undertaking strategic flagship projects of a highly symbolic nature to develop resource efficiency into a well-known and accepted "brand". One or two consultancies should be recruited to implement them in co-operation with prominent companies, including manufacturing sector enterprises.

2.3.3 Resource Efficiency Agency: Successfully Promote Diffusion and Innovation (4)

Idea: As a lean organisation, the Resource Efficiency Agency will link actors into networks and will be directly involved in developing appropriate structures (e.g. concerted campaigns at the regional level, networking advisory competencies). The objective of the Resource Efficiency Agency will be to effect noticeable progress with inventions designed to increase resource efficiency and their diffusion. Thus the main emphases of its work will be to

- Network and support actors
- Serve as a guide
- Step up a resource-efficiency campaign
- Initiate educational concepts
- Co-develop and assist promotional programmes and
- Further develop the policy mix.

Organisation: The resource efficiency agency will act as a guide in the corporate landscape. It will act as the first point of contact for information, mediation and distribution in support of implementation (coordinating rather than intervening). It will work with authorities and newly developed intermediary structures (e.g. associations, chambers of industry and commerce and chambers of trade at the federal state and regional level). It will offer companies initial subject- and region-specific information online and by telephone. In addition it will be able to make suggestions for (new) promotional priorities for companies in cooperation with enterprise-related partners and resource efficiency networks, and in individual cases participate in their actual development and implementation.

It will simultaneously engage in a resource efficiency campaign to push agenda setting for the resource efficiency idea. This campaign will include, for example, information on specific economic measures and instruments (e.g. promotional programmes).

2.3.4 Resource Efficiency Data Basis: Develop Indicators and Data Sets (5)

Idea: Currently resource efficiency indicators are often either absent or inadequate. To overcome this problem a set of resource-related key performance indicators (R-KPI) will be developed so that resource consumption at company level can be mapped in a meaningful way that permits comparison and practical application. This will cater to the need for enterprises and financial services providers to have sufficiently robust and comparable data to be able to include resource efficiency in their financing and investment decisions.

Organisation: A set of resource-related R-KPIs of this kind will include both cross-sector and sector-specific indicators that can be used for analysis and evaluation processes by financial services providers and by companies themselves. It will be devel-

oped on the basis of the first existing KPI sets (see Onischka et al. 2010). The goal is for the indicators to be fundamentally suiTab. for companies to capture data independently. The development process will be facilitated with the involvement of relevant stakeholders from the financial sector, by the private sector and by Federal Environment Ministry and Federal Environment Agency auditors. The results can also be used within twelve months for further legislation.

Under the aegis of a data centre that should be attached to the Federal Statistical Office, resource-relevant information at the enterprise level made available via reporting obligations, from annual reports or general statistics could be gathered together and processed. In the long term, this should lead to systematic company reporting. The provision of data for politicians, associations and especially for financial service providers should also be supported by national and international harmonisation, for example in development and standardisation bodies. After a pilot phase of two to three years, the data centre should be fully functional and could in the medium term provide the necessary data for financial service providers' risk management. This could also satisfy the need to develop resource-related key performance indicators in the Task 4 areas Efficiency Awareness & Performance and Innovation & Market Launch.

2.3.5 Intermediary Resource-Efficiency Structures: Mediation and Promotional Structures (8)

Idea: At the regional level, existing mediation and promotional programmes aimed at increasing resource efficiency should be expanded and linked.

Organisation: The central measures are:

- To build and/or expand actor structures to increase the resource efficiency of sectors, regional intermediaries and private-sector associations in the form of financial support and by establishing efficiency offices
- To optimise existing pools of advisers at the regional level. For example, advisers who are competent both professionally and in terms of process could be supported by "efficiency angel" networks in the company context. Adviser tandems can offer specialist technical skills combined with implementation competence and will be deployed regionally, inter alia by way of integration into existing structures (associations, networks, etc.)
- To push regional networks in the direction of resource efficiency.

To build up intermediary resource-efficiency structures, an appropriate promotional programme for institutional structures (3) will either be integrated into existing promotional structures or newly launched (see in greater detail Görlach/Schmidt 2010).

2.3.6 Training and Continuing Education: Qualification and Educational Concepts (7)

Idea: A heterogeneous but balanced mix of concepts and strategies for training and continuing education in companies and universities to address the subject of resource efficiency.

Organisation: The lack of resource competency (inter alia life-cycle thinking or innovation competence) calls for targeted (training and) education measures. Since existing educational infrastructures and corresponding promotional programmes are hardly geared to these subjects and target groups (including intermediaries), (state) qualification programmes must be adapted or offered additionally. Individual measures can be assigned to the following areas:

Building up basic knowledge with:

- An Internet platform for resource efficiency
- Research seminars for teaching staff
- Co-ordination of further professional training and teaching
- Training advisers/tandem coaching (technical and implementation skills).

Develop a "Virtual Resource University" (see also Task 13.2; http://ressourcen.wupperinst.org/downloads/index.html):

- "Virtual Resource University"
- Integrated courses of study/dual courses of study
- Innovation camp.

Hold competitions (see also Task 13.2):

- Young researchers/entrepreneurs (resource efficiency as a prize category)
- Excellence competitions for academic training and further education.

2.3.7 Commission of Inquiry: Set Up a Commission of Inquiry into Resource Efficiency and Sustainability in the Financial Sector (9)

Idea: As part of the sustainable increase in resource efficiency, a Bundestag commission of inquiry to answer fundamental questions relating to the role of the financial sector taking into account necessary structural changes.

Organisation: Within one electoral term, political positions will be developed and a long-term strategy will be worked out concerning how the finance industry should contribute to sustainable development of financial products. Equipped with a focused assignment, the commission would analyse and assess the present role of the financial industry in terms of sustainable development and the goal of increasing energy and

resource efficiency and identify perspectives for making appropriate structural changes in the financial sector.

The inquiry commission findings could be the starting point for specific projects in the context of the intended research programme. They could also serve as a guide for a long-term strategy and as orientation for financial supervision.

2.3.8 Financial Supervision: Define Legal and Supervisory Provisions for Risk Management by Financial Services Providers (10)

Idea: The current regulation of risk management by financial services providers effectively prohibits the inclusion of risks resulting from business enterprises' use of resources (see Onischka et al. 2010 on this). Steps should therefore be taken to define the regulatory framework more precisely in this respect.

Organisation: The first "instant measure" that can be realised at short notice should be to make full use of the interpretative scope of financial supervision within the framework of current regulations. This would enable changes in rating and risk management processes in rating agencies, for example. Within the next few years adjustments could also be made to financial market regulation (Basel II/III). This could be prompted by appropriate initiatives by the German supervisory authorities in the development bodies (e.g. the Basel Committee).

2.3.9 Commercial Law Disclosure: Publication of Key Performance Indicators for Disclosure in Company Reports (11)

Idea: The requirements under commercial law to disclose non-financial performance indicators should be legally supplemented by resource-related aspects. In addition, this information should be integrated into the annual management report and financial statement.

Organisation: With reference to the resource-related key performance indicators developed (5), the commercial law provisions concerning the disclosure of non-financial performance indicators should be supplemented by resource- and climate-related aspects. Since publication in management reports will make this information relevant for audit (Section 289 (1) of the German Commercial Code [HGB]), resource efficiency would have to be included in the professional audit and accounting standards.

2.3.10 Stock Exchanges: Include Ecological Aspects in the Listing Conditions for High-End Market Segments (12)

Idea: German stock exchanges should supplement the wide-ranging conditions for the admission of capital market enterprises to their high-end segments (e.g. Prime Standard) with resource efficiency and climate aspects (on this, see Onischka et al. 2010).

Organisation: The first step would be to oblige listed companies to publish an annual audited environment and sustainability report in accordance with GRI guidelines and to participate fully in the Carbon Disclosure Project. The disclosure of resource aspects could be added at a later date, with reference to the resource-related key performance indicators developed (5). Along with the Federal Environment Ministry and the Federal Environment Agency, the momentum for this should be generated in particular by the stock exchange supervisory authorities in Germany's federal states.

2.3.11 Innovation Agents: Know-How and Capital for Business Enterprises (14)

Idea: The new concept of innovation agents links innovation coaches (advisers on innovation management in business enterprises) with business angels who bring private capital, know-how and external contacts into companies. This will generate new synergies for increasing resource efficiency, especially at the early stages of innovation.

Organisation: To counter their lack of in-house knowledge and know-how, companies need actors who lend specialist professional support to their corporate product and service innovation processes, from invention to market launch. Along with government grants, innovation projects are financed largely by private share capital. The new aspect here is the interaction between in-house innovation advice (innovation coaches) and private share capital (business angels). The deployment of specially trained innovation coaches would professionalise innovation management in companies and spur on product, structure and process innovations in SMEs. Business angels, in contrast, bring private capital, commercial know-how and external contacts into companies. The networking of these two actors, who have functioned separately hitherto, could activate and generate considerable synergy potential. The basis for the work of the innovation coaches will be a promotional programme set up to supplement existing promotional programmes in individual federal states (3).

2.3.12 Innovation Laboratories: Improve Resource Competence and Capacity for Innovation (15)

Idea: Innovation laboratories would provide a temporally and organisationally flexible co-operation opportunity for a cross-company innovation process in complex or large-scale research projects in the field of resource efficiency. Innovation laboratories would not only be a form of cooperation between companies and various company-related actors, but would offer the necessary equipment, know-how and human resources for complex innovation projects. This would enable SMEs to address their innovation needs directly and to overcome size-related disadvantages in relation to other business enterprises.

Organisation: Depending on their detailed conception, innovation laboratories could address the following sub-goals:

- Training of creative milieus
- Focusing on problem-solving strategies in the innovation process
- Cross-company spread of innovation risks
- Improving resource efficiency at the product and company level.

The innovation laboratories should be conceived as collaborative projects by business enterprises in which scientific institutions and other intermediaries could play a creative role as neutral partners. The innovation laboratories would have a co-operative basic understanding. They should make a crucial contribution to accelerating the innovation process and place emphasis on the joint realisation of research findings.

For implementation, we propose an "Innovation Laboratory to Increase Resource Efficiency" promotional programme (see Chapter 2.3.13).

2.3.13 Set Up Promotional Programmes (3)

Idea: Set up targeted promotional programmes to implement and finance the individual instruments and integrate these into promotional structures as necessary.

Organisation: The proposed promotional programmes would include:

- *A sustainable financial sector research programme* to deal with specific methodological issues in the area of linking sustainability-relevant aspects with the financial sector (8) (see Onischka et al. 2010).
- *An educational programme*: funding and support for an educational infrastructure in the area of resource efficiency (Instrument 7) (see Görlach/Schmidt 2010).
- *An "Institutional Structures" promotional programme:* this reflects the need for a structure to promote the institutional resource-efficiency structures instrument (8) (see Görlach/Schmidt 2010).
- *"Innovation Laboratories to Support Resource Efficiency" promotional programme:* a non-technology- and non-sector-specific nationwide promotional programme in collaboration with business-oriented research institutes and other actors (15) (see Lemken et al. 2010).
- *An "Innovation Coaches" promotional programme:* this programme would offer companies the opportunity to strengthen collaboration with external cooperation partners for innovative projects (14) (see Lemken et al. 2010).

2.3.14 Programme Design: Optimising Promotional Structures (13)

Idea: Build on complementary individual suggestions for optimising the design of and access to promotional programmes in order to interlink areas of activity and promotional structures better and more closely (see Lemken et al. 2010). The aim is not only to make promotional structures effective and efficient, but also to cater better to the needs of SMEs.

Organisation: EU, German government and federal state promotional programmes with their wide range of grants, low-interest loans, equity instruments and assumption of liability are an indispensable cornerstone for financing the innovative SME sector. However, programme structures often lack clarity, transparency and flexibility. In addition, procedures for applying for and executing projects represent a major obstacle for many SMEs.

It is proposed that the design of the relevant promotional programmes be optimised continuously with a view to integrating the subject of resource efficiency. At the promotional organisation level, target systems and corresponding performance indicators will be devised for the entire range of support activity. In addition, access to promotional programmes will be made simpler. Selected individual measures are:

Structuring promotional programmes:

- Bundle, streamline, standardise and interlink promotional programmes
- Enable promotional programmes to be combined and funding to be cumulative
- Actively address companies, coaching.

Optimising promotional programmes:

- Integrate quantitative targets into programme guidelines, project applications, etc.
- Include resource efficiency as a goal in non-technology-specific promotional programmes
- Boost incentives for borrowers' banks to arrange Kreditbank für Wiederaubau (KfW) loans
- More target-group-specific incentive systems (e.g. resource bonus).

Managing promotional programmes:

- Regular, cross-programme evaluation of comparable criteria.

2.3.15 Evaluation Agency: System Evaluation and Quality Assurance (6)

Idea: In Germany, unlike in the European context, promotional programmes and research promotion guidelines have not been evaluated across programmes and using comparable criteria. Yet this is a fundamental prerequisite for monitoring the success of programmes, for using public funds even more efficiently and for being able to optimise programmes. An independent evaluation agency would evaluate all measures (in this case, all policy tasks) of relevance to resource-efficiency policy, but also the research promotion system. Evaluation would include how effectively and efficiently funds are spent and further quality criteria still to be developed. The goal of the evaluation agency's work should be to analyse research promotion and funding in terms of their ef-

fectiveness and to identify action required to improve them, including with respect to resource efficiency.

Organisation: The evaluation agency would also analyse the way in which research promotion instruments work, along with the extent to which they are designed and used efficiently. The work of the agency would include portfolio analysis, bundling and setting priorities at the programme level, as well as evaluating research projects and individual plans in the context of innovation and resource efficiency.

The inter-ministry group (1) and the Resource Efficiency Agency (4) would use the evaluation agency’s findings to optimise measures and make them more focused. Accordingly, these findings would be incorporated directly into a future programme design (13) and into further development of the policy mix by the inter-ministry group (1) and the Resource Efficiency Agency (4).

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